W-IE–NE-R

MTCA.4 1000W PS

1000W Auto Ranging 90-265 VAC MicroTCA™ Power Supply

User's Manual V1.2

General Remarks

The only purpose of this manual is a description of the product. It must not be interpreted as a declaration of conformity for this product including the product and software.

W-Ie-Ne-R revises this product and manual without notice. Differences between the description in manual and the product are possible.

W-Ie-Ne-R excludes completely any liability for loss of profits, loss of business, loss of use or data, interrupt of business, or for indirect, special incidental, or consequential damages of any kind, even if
W-Ie-Ne-R has been advises of the possibility of such damages arising from any defect or error in this manual or product.

Any use of the product which may influence health of human beings requires the express written permission of **W-Ie-Ne-R**.

Products mentioned in this manual are mentioned for identification purposes only. Product names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies.

No part of this product, including the product and the software may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the express written permission of **W-Ie-Ne-R**.

Table of contents:

1 GENERAL DESCRIPTION 4

1.1 MAIN FEATURES 4

1.2 TECHNICAL SPECIFICATION 5

2 FUNCTIONAL DESCRIPTION 6

2.1 DIGITAL POWER CONTROLLER 6

3 UTILIZATION 8

4 FIRMWARE 10

5 USB™ LABVIEW™ SOFTWARE 11

5.1 NATIONAL INSTRUMENTS SOFTWARE 11

5.2 USB™ CONNECTION 11

5.3 LABVIEW™ PROGRAM: MTCA.4 CONTROL 13

5.4 USER INTERACTION AND LED BLINK CODES 15

5.5 UNDERSTANDING TRIP PHILOSOPHIES 16

5.6 CRATE OFF FUNCTION 17

5.7 BACKUP & RESTORE 18

1 General Description

The **W-Ie-Ne-R** MTCA.4 is a low noise and ripple high power density power supply in a double height / double width form factor designed according to the PICMG MTCA-4 standard. It provides continuously up to 1000W for 12V payload power as well as 3.3V management power.

The **W-Ie-Ne-R** MTCA.4 includes the AC mains filter, the low noise AC-to-DC converter in switching technology as well as the digital power controller for up to 16 slots.

Being designed with applying the classical rules for common mode suppression and ground loop reduction the W-Ie-Ne-R MTCA.4 power supply is essential for enhanced DAQ performance in noise sensitive applications in science and industry. In science these are all applications dealing with analogue sampling and generation above ten bits of resolution down to sub mV volts range. In industry those were applications with advanced requirements on analogue signal sampling quality ranging from speech, music, sonar up to video and radar signal generation/acquisition and processing. Hence the achievable resolution in the crate is mainly limited by the quality of tertiary noise sources like crate blowers or other DC/DC-converters onboard AMC cards.

The integrated MTCA.4 Digital Power Controller together with the Hub protects the whole MTCA.4 crate and its modules. It also monitors the complete chain from mains input, PFC and DC/DC-converter stages to the outputs to prevent the unit from any uncontrolled operation.

An internal MTCA.4 Digital Power Controller works in conjunction with a carrier hub acc. to the MTCA.1 and IPMI specifications. For reasons of final IPMI system software quality test and time to market for the IPMI software functionality W-Ie-Ne-R is in contract with N.A.T. – EUROPE.

Additionally functioning of the power supply can be monitored via a LabVIEW™-program coupling to an external USB-Link without interrogation of processes controlled by the hub/s. This is default and is called “IPMI MTCA.4” Mode.

Supplementary the MTCA.4 Digital Power Controller can be driven also completely independent from a hub via the same USB-Link by switching into the so called “W-Ie-Ne-R Mode” within the same LabVIEW™-program. Here any AMC-Card can be switched on or off independently by buttons for each channel by hand (workshop/factory mode).

1.1 Main Features

- 1000W continuous wattage, low noise power supply according to MTCA.1 specification
- Discrete Converter Design in double height - double width MTCA size
- Wide range auto ranging AC input 90 - 265 VAC / 50 - 60 Hz
- Lowest noise and ripple, < 5 mV peak to peak (0 - 20 MHz)
- Digital Power Controller for full IPMI compliance to MTCA.4 style carrier Hubs
- 16 channels 12V DC, up to 8.4A each (Payload Power), 1000W in total
- 16 channels 3.3V DC, up to 0.2A (Management Power)
- Managed via MTCA.4 hub high level IPMI protocol stack (NatView™ compatible)
- LabVIEW™ monitoring software with workshop mode via front panel USB

1.2 Technical Specification

1000W MTCA.4 Power Supply	**12V Payload Power**
Input voltage, 47-63 Hz	90V-265V, <16A sinusoidal
Output Ripple and Noise: Full load / 80% rated output (0-20 MHz Bandwidth)	< 4 mVpp / < 2 mVrms
Regulation static: Change of output voltage versus load change 10-100%	< 0,1% or < 15 mV
Regulation static: Change of output voltage versus line change +/-10%	< 0,02% or 4 mV
Regulation dynamic: Change of output voltage versus load change +/-25% per channel	< 0,02% or 4 mV
Recovery time versus load change 10-100% Recovery time versus load change +/-25%	< 0,2 ms for < 1% deviation
Output impedance: Static / Dynamic(at 100 kHz, 6V output)	0,5 mΩ / 250 mΩ
Temperature Error	< 0,02 %/K
Thermal Protection (No. of thermal switches)	(5x)
Derating, max. operating temperature	No derating up to 50℃
	3V3 Management Power
Output Ripple and Noise: Full load / 80% rated output (0-20 MHz Bandwidth)	< 5 mVpp / < 3 mVrms
Line Regulation Accuracy	<0,2%
Load Regulation Accuracy	<0,6%
Output Ripple Frequency	1.25 MHz
Recovery time versus load change 0-100% Recovery time versus load change +/-50%	< 0,01 ms for < 25 mV deviation
Short Time / Long Time Output Current Limit	8A / 4A

EMC compatibility

EN 61 000-6-3:2001	RF emission
EN 55 022:1998 + Corr:2001 + A1:2000 Class B	conducted noise
EN 55 022:1998 + Corr:2001 + A1:2000 Class B	radiated noise
EN 61 000-3-2:2001	harmonics
EN 61 000-3-3:1995 +Corr:1997 +A1:2001	flicker
EN 61 000-6-2:2001	immunity
EN 61 000-4-6:1996 + A1:2001	injected HF currents
EN 61 000-4-3:1996 + A1:1998 + A2:2001	radiated HF fields, ”900 MHz”
EN 61 000-4-4:1995 + A1:2001	burst
EN 61 000-4-5:1995 + A1:2001	surge
EN 61 000-4-11:1994 + A1:2000	voltage variations
EN 61 000-4-2:1995 + A1:1998 + A2:2001	ESD

2 Functional Description

First stage of the MTCA.4 Power Supply is a chambered high performance two-stage AC-mains input filter blocking all differential and common mode EMI from the inside to levels beyond the EN 55 022 - CLASS B. The second stage is a high efficient intelligent PFC with low noise and ripple. The capacitor banks store enough energy to prevent the crate for minor mains power drops. In a third stage a high efficient DC/DC-Full-Bridge Converter is working in Zero Voltage Switching Technology. Fourth a DC-Output capacitor bank with sophisticated output filter circuitry is standard for all MTCA.4 Power Supplies. As last comes the Digital Power Controller.

By definition of the MTCA.1 specification the intelligent counterpart for the Carrier Manager Hub *MCH* talking to is the Digital Power Controller as part of the **W-IE-NE-R** MTCA.4 power supply. All channels and outputs can be configured with the MCH Hub Software via the IPMI protocol with exception on the MCH and *CU* (Cooling Units) channels themselves which are configured during startup after autonomous operation.

2.1 Digital Power Controller

The Digital Power Controller together with the Hub protects the whole MTCA.4 crate and its modules. It also monitors all parameters like voltages, currents and temperatures for the complete chain from the mains input over the PFC and DC/DC-converter stage to the outputs.

12 V Outputs (Payload Power)

Input Voltage Setpoint

12.6 Vdc typical	as Primary PM
11.8 Vdc typical	as Redundant PM

Management Power Interdependence

12 V will not be applied without 3.3 V applied to a load
Removal of 3.3 V also removes 12 V and de-asserts ENABLE#

Maximum Load

up to 8,4 A maximum per channel

Load Count

16 Channels
ON/OFF per ENABLE#[1..16] per MTCA.4 MCH Controller
Complete ORING device with PASS & BLOCK FETS

Over Current Protection (Hardware)

2,1 .. 8.4A / 0.41 .. 12.71 ms
Shutdown individually programmable per MCH Controller
Current limits: 4 Bit
Time out times: 5 Bit

Short Circuit / Inrush Protection (Hardware)

5,0 .. 20,0 A 4 Bit programmable fast trip current (proportional to OCP)

Low Voltage Protection (Hardware)

10,2V .. 12,0V in steps of 600 mV
Power Good Condition: 2 Bit

Longtime/Failure Supervision Monitor and Fine Grain Trip Protection (Software)

12 Bit Sampling of individual channel Current/Voltage/Power
Running Means of up to 128 Samples for Module Supervision and Data Logging

3.3 V Outputs (Management Power)

Input Voltage Setpoint	3.3 Vdc typical
Total Regulation Range	3.16 to 3.63 Vdc Extracted from 12 V Input Voltage
Rated Load	1.6A / 6W per Power Adapter 200 mA / 0.7W per Module (clamped by channel controller)

SMP (Shared Management Power)

Output Voltage	4.5 .. 5.5 Vdc typical 2..3 A max (recovering fuse: 1A) Internally Short Circuit/Overload/Overvoltage protected (a short on SMP shuts down the whole crate)

3 Utilization

The **W-IE-NE-R** MTCA.4 is intended for stationary use in MTCA.1 or MTCA.4 crates under normal operating conditions. For more rugged or other implementations please contact the factory.

By default the AC mains is fused by a standard 20 mm slow-blow fuse of 10A for input protection of the power supply. It is accessible from the front size panel and shall be exchanged while the power cord is unplugged. The fuse can be changed according to the requirements of the mains voltages used worldwide (e.g. 16A for Japan or e.g. 6A for UK).

Figure 1: *The W-IE-NE-R MTCA.4 Power Supply Front Panel Elements*

The MTCA Crate starts automatically after powering of the **W-Ie-Ne-R** MTCA.4 power supply.

Shortly after the **W-Ie-Ne-R** MTCA.4 power supply is at mains the PFC needs some seconds to fill the capacitor banks while the green PFC LED shows a short fast blink, see fig 1. When fully operational the PFC LED shows steady green state. If the PFC has any major problem it will show it with special blinking codes (e.g. long-short-short) important for **W-Ie-Ne-R** repair workshop.[1]

As specified in the PICMG MTCA.1 specification the crate starts first in autonomous mode with both blowers (CUs, cooling units) on at maximum speed and the management hubs (MCHs) on. After established communication with the power supply module (PM) the individual powers for the attached AMC cards are distributed. If the calculated power budget is finished no further AMC card will be integrated into the system. Finally the blowers speed down and up to a final optimum.

State-of-the-art to switch MTCA.4 crates ON and OFF regularly is to invoke it via one of the MCHs command interfaces. Drawback is that the crate is not really OFF then: While all AMC cards power down the CUs still work but at a minimum rate to cool the PM/s and the MCH/s. This may be acceptable for a counting room but will not be silent enough for a laboratory.

Else if one likes to switch OFF the supply by hand **W-Ie-Ne-R** recommends to push the ◙ / HSS (Hot Swap Switch) only once, see fig. 1. (this default option can be inhibited by request, s. §5.6). Then the **W-Ie-Ne-R** MTCA.4 will request the MTCA hub to power down the crate completely controlled. After this interrogation the Status BLUE LED on the power supply front panel is blinking till completely on signaling that this action has been finished. After this the **W-Ie-Ne-R** MTCA.4 power supply is in the *Hot Swap Status*. The crate is then completely silent.

While in Hot Swap Status return the crate back into operation by one push on the ◙ / HSS switch

– or – unplug the power cord or use an external circuit breaker to finally switch off the crate

– or – extract the module from one crate to another (with power cord on)

– or – move it to another power slot position (with power cord on).

W-Ie-Ne-R recommends not too often or regularly switch OFF the crates power supply by

– or – unplugging the power or power cord when just on substantial load,

– or – tearing the power supply out of the slot when just on substantial load,

even though the supply itself would not directly fear damage by doing this.

If more than one **W-Ie-Ne-R** MTCA.4 power supply resides in a crate switching on/off is more complex if special redundancy conditions have to be met (1+1, or 2+0). All states following the autonomous operation are controlled by the management work of an MCH. The MCH supported redundancy setups will depend on the last or actual backplanes EEPROM configuration (FRU settings) as well as on the geographical addresses under which the power supplies reside.

For state-of-the-art power redundancy and power sharing modes please refer to the MTCA.1 specification standard or request help from your system partner (e.g. N.A.T./ELMA/VadaTech).

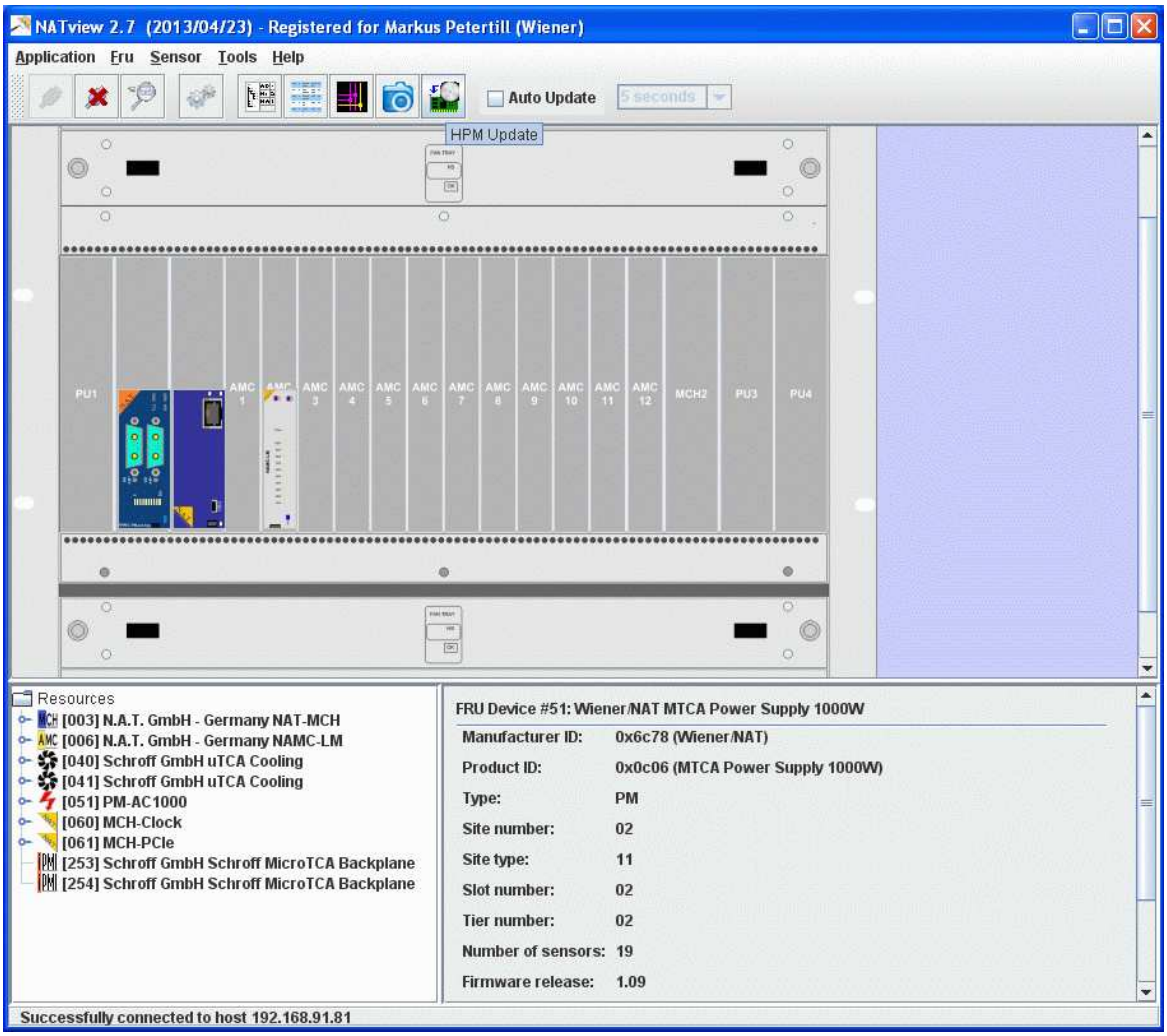
FLT, see fig. 1, is signaling when power supply is a secondary power supply left without power in a crate **or** blinking during firmware upgrade **and if not of both** signals for any reason of repair and maintenance.

[1] Within the newest versions of the **W-Ie-Ne-R** MTCA.4 power supply the PFC LED signals also the redundancy level: off = inactive, green = active primary, orange = active secondary or redundant

4 Firmware

At the time of writing, a standard IPMI Firmware Refresh is only supported via the NatView™ software, http://www.nateurope.com/, which has to be registered to the user by N.A.T.

In NatView™ the update/upgrade process is called “HPM Update” and can be invoked by first selecting of the corresponding **W-IE-NE-R** MTCA.4 power supply, called “PM-AC 1000” in the resource list. Then one can infer HPM-Update via the pull down menu or the special icon (tooltip):


NATview 2.7 (2013/04/23) - Registered for Markus Petertill (Wiener)
Application Fru Sensor Tools Help
Auto Update
5 seconds
HPM Update
Resources
[003] N.A.T. GmbH - Germany NAT-MCH
[006] N.A.T. GmbH - Germany NAMC-LM
[040] Schroff GmbH uTCA Cooling
[041] Schroff GmbH uTCA Cooling
[051] PM-AC1000
[060] MCH-Clock
[061] MCH-PCIe
[253] Schroff GmbH Schroff MicroTCA Backplane
[254] Schroff GmbH Schroff MicroTCA Backplane
FRU Device #51: Wiener/NAT MTCA Power Supply 1000W
Manufacturer ID: 0x6c78 (Wiener/NAT)
Product ID: 0x0c06 (MTCA Power Supply 1000W)
Type: PM
Site number: 02
Site type: 11
Slot number: 02
Tier number: 02
Number of sensors: 19
Firmware release: 1.09
Successfully connected to host 192.168.91.81

In the opening window direct to a link to the corresponding “.hpm” firmware file to be found and downloaded via the **W-IE-NE-R** web file archive under: http://file.wiener-d.com/firmware/. When invoked the download via IPMI (I2C-Interface) will take a longer time until accomplished (about ten minutes). During download FLT/LED1 is signaling that the download process should not be disturbed. When accomplished the PM has to be rebooted for the new version.

Before invoking a HPM-Update or HPM-Upgrade one backup file from the corresponding module should be generated (see §5.7).

A possibly faster/easier/free way of firmware refresh via the front panel USB interface depends on the generation of a new download program tool (boot loader) and will be made accessible through the **W-IE-NE-R** file archive to all users as soon as it is available.

5 USB™ LabVIEW™ Software

Using the LabVIEW™ monitoring or workshop software is another way to get view or access to some intrinsics of the **W-IE-NE-R** MTCA.4 Power Supply Controller.

5.1 National Instruments Software

Basically you need the **LabVIEW Run-Time Engine 2012** residing on your computer. If not please refer to the corresponding home pages from **National Instruments** (www.ni.com, the path be e.g. Home Page > Support > Downloads > Drivers > NI Hardware Drivers).

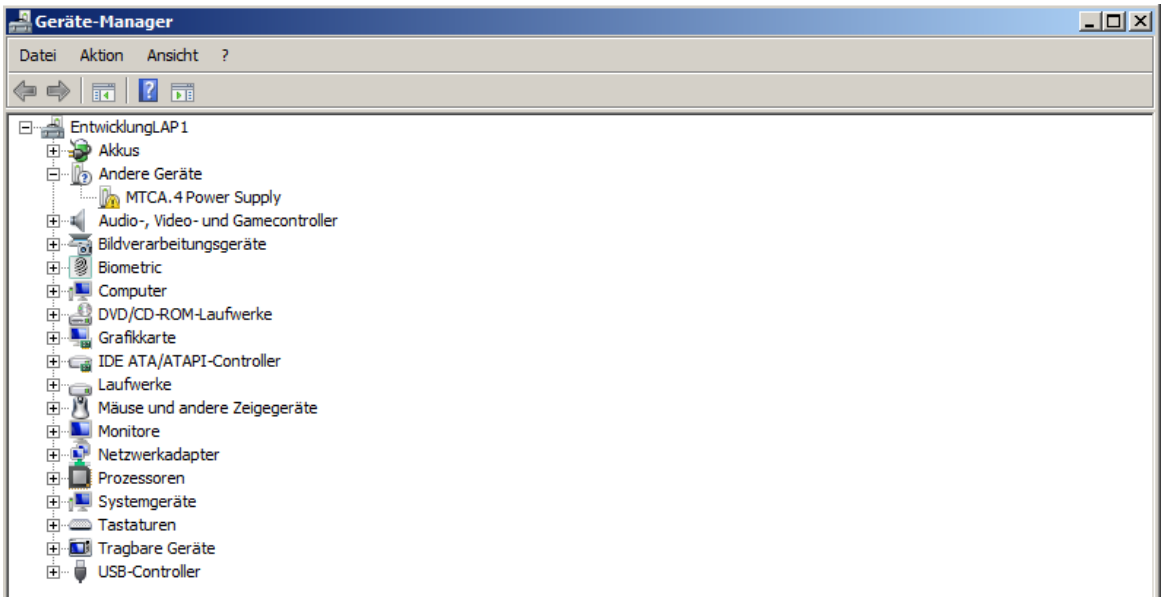
Additionally you need to have installed the **NI-VISA V**irtual **I**nstrument **S**oftware **A**rchitecture which is a proprietary standard for handling of computer interfaces like USB, GPIB, RS232 with (not only) LabVIEW. Normally it still resides on your computer if you installed a LabVIEW (of any version) or another NI Development Software. If not you can find the corresponding software for free download under (www.ni.com, e.g. www.ni.com/download/ni-visa-5.4/4230/en/ and start "visa540_full.exe" actually for Windows).

Finally you should find the *NI Measurement and Automation Explorer* in the VISA subfolder of the *National Instruments* Program Folder or just have a NI-MAX icon on the desktop.

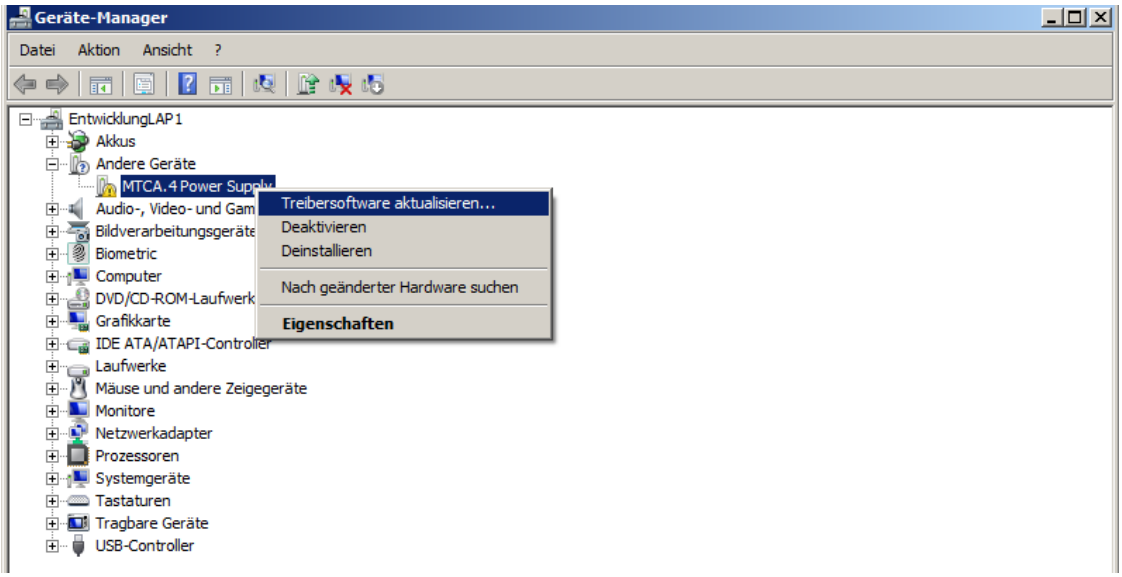
5.2 USB™ Connection

To take advantage of the MTCA.4 software (Auxiliary Diagnostic Supervisor) first of all you have to connect your PC via an Standard USB

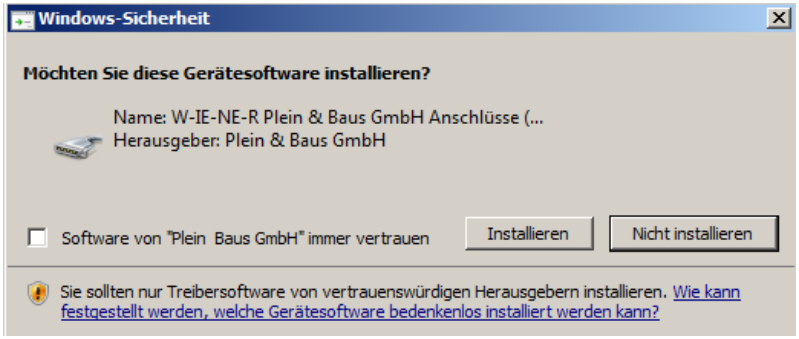
to the MTCA.4 Mini USB AB connector on the left top side of the front panel (Fig.1). Invoke the "Other Devices" in the Device Manager (Start > Control Panel > System > Device Manager):



If the USB connection has been found there must be some “MTCA.4 Power Supply” statement under “COM and LPT connections”, with or probably without an exclamation mark. If it has exclamation mark the corresponding driver is just not in your portfolio of **W-IE-NE-R** registered USB drivers. For this select a new driver or actualize it via the pull down menu activated by clicking the right mouse button on the MTCA.4 Power Supply statement.



Select the new driver by the professional way by doing it not automatically but by hand and clicking through the statements such as to select the file folder container yourself. Select the folder in which you have copied or unzipped the files, e.g. „E:\vcpDriver“ and confirm all the installation messages. You will get the windows signed driver files in the **W-IE-NE-R** web file archive under http://file.wiener-d.com/software/vcpDriver.


Windows-Sicherheit
Möchten Sie diese Gerätesoftware installieren?
Name: W-IE-NE-R Plein & Baus GmbH Anschlüsse (...
Herausgeber: Plein & Baus GmbH
Software von "Plein Baus GmbH" immer vertrauen
Installieren
Nicht installieren
Sie sollten nur Treibersoftware von vertrauenswürdigen Herausgebern installieren. Wie kann festgestellt werden, welche Gerätesoftware bedenkenlos installiert werden kann?

Finally confirm the installation success message. Then the exclamation mark in the folder “Other Devices“ at the MTCA.4 Power Supply device should vanish and the corresponding COM Port Number should follow the name in brackets. In NI-MAX this connection will then appear too:

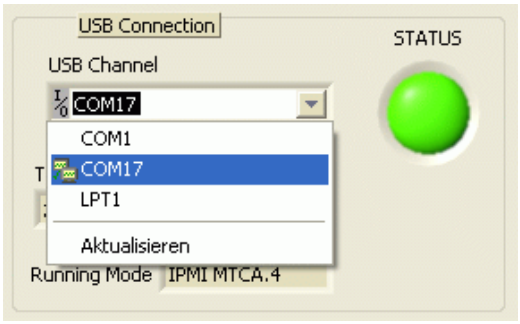
5.3 LabVIEW™ Program: MTCA.4 Control

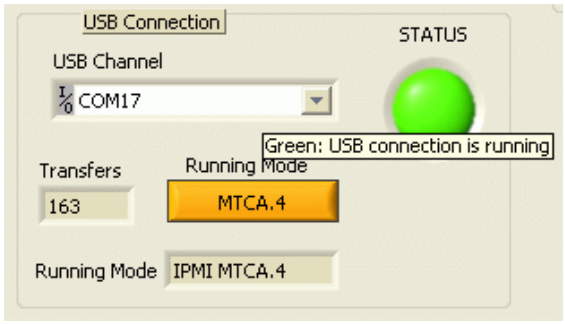
This software is available in the **W-IE-NE-R** file server archive (http://file.wiener-d.com/software/MTCA.4). The MTCA.4 program is simply consisting of following three files:

Name	Größe	Typ	Geändert am
MTCA.aliases	1 KB	ALIASES-Datei	22.01.2014 17:46
MTCA.exe	461 KB	Anwendung	22.01.2014 17:46
MTCA.ini	1 KB	Konfigurationseinst...	22.01.2014 17:46

Starting the executable leads to one single LabVIEW Front Panel from which everything can be monitored, see fig. 1. You can stop the program easily via the button at the lower left corner or simply close the window itself at the upper right.

To have always an eye on the USB connection the USB settings block always resides at the lower left to show if the selectable COM-port is established and running. If yes the transfers counter is counting while the USB running LED is at green. Tooltips everywhere in the program direct to short help messages:





The software starts in the **MTCA.4 IPMI** working Mode (by factory setup the default Mode is the **MTCA.4 IPMI** Mode). This mode makes visual useful channel, crate and power supply internal information when running MCH controlled MTCA crates for diagnostic purposes.

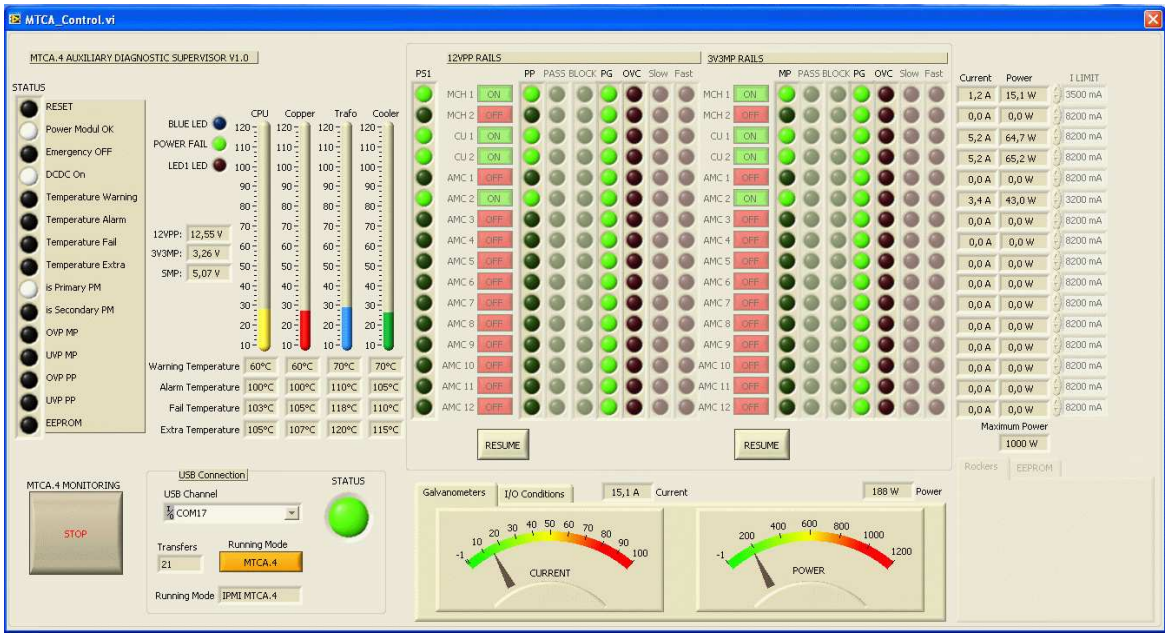


Figure 1: *The MTCA.4 Monitoring Software in normal/default MTCA.4 IPMI Mode*

Sometimes if allocation of severe system problems is needed the or a MTCA crate may simply run without a hub for tests the **W-Ie-Ne-R** Mode can be activated by simply plugging the Run Mode Button within the USB Settings Block. The internal system reboots which needs some time and the USB run LED gets green after some seconds. Sometimes it does restart then in the original mode - then please retry once more.

Please be aware that the implemented mode resides permanent even after a power down of mains. A switch back is possible only with this software and can not be invoked via a MCH system call (there is a further way to invoke **W-Ie-Ne-R** Mode temporarily without LabView, see §5.4.2).

In **W-Ie-Ne-R** Mode the front panel is presented with much more detail, see. Fig. 2.

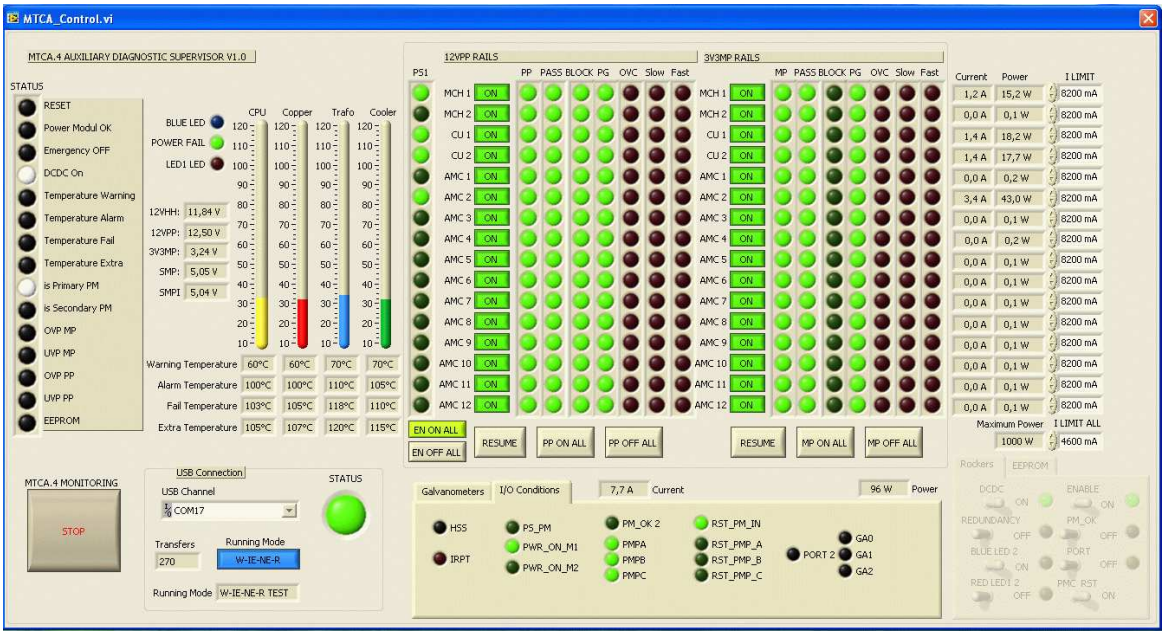


Figure 2: *The MTCA.4 Monitoring Software in W-IE-NE-R Mode*

At start-up all 12 AMC card channels and the 2 MCH and 2 CU channels are all starting with the maximum current setting of 8 Amps. Again tooltips show for additional hints.

If there is no problem for the attached hardware in the crate feel free to play around with the channels parameters: It is possible e.g. to switch on and off every channel individually whether Payload or Management Power at any time or change the current limits in fine steps of 100 mA.

5.4 User Interaction and LED blink codes

The user interface of the power supply in the broadest sense consists of some LEDs, the hot-swap button and the main cord jack. The button or the main cord jack for example could be used to change the state of the power supply. The LEDs can signal the current state of or a specific error. The user interaction in normal MTCA.4 IPMI Mode and in special **W-Ie-Ne-R** Mode needs to be considered separately.

5.4.1 User Interaction and MTCA.4 IPMI Mode

In MTCA.4 IPMI Mode the usage of the hot-swap button and the signals of the red and blue LED are according to the MTCA.4 specification.

5.4.2 User Interaction and W-Ie-Ne-R Mode

The power supply can be switched into W-Ie-Ne-R Mode permanent or temporarily. A permanent switch of the operation Mode could be done via the LabView software MTCA.4-Control provided by W-Ie-Ne-R. By pressing the hot-swap button while plug-in the main supply cord for at least 10 seconds the power supply could be switched temporarily in W-Ie-Ne-R Mode. If the power supply starts-up in W-Ie-Ne-R Mode the blue and the red LED will blink fast 3 times.

Table 1: Hot-swap button in **W-Ie-Ne-R** Mode

Hot-swap button	Description
key pressed	Switching power supply on or off.
key pressed for 10 sec at start-up	Selecting temporarily operation mode: **W-Ie-Ne-R** Mode.

Table 2: Blink-Codes in **W-Ie-Ne-R** Mode

LEDs	Blink code	Description
blue	off	Power supply switched off.
blue	on	Power supply switched on.
blue	2 sec on, 0.2 sec off	Power supply switched on, at least one channel off (for example because of overload).
blue + red	3 times: 0.1 sec on, 0.1 sec off	Power supply starts-up in **W-Ie-Ne-R** Mode.
red	endless: 3 sec on, 1 sec off, 1 sec on, 1 sec off	PRAM not found. System halted.
red	3 sec on, 1 sec off, 1 sec on, 1 sec off, 1 sec on, 1 sec off	PRAM error..
red	3 times: 3 sec on, 3 sec off	Firmware exception. System halted.
red	endless: 2 sec on, 2 sec off	Invalid operation mode. System halted.

5.5 Understanding Trip Philosophies

The **W-Ie-Ne-R** MTCA.4 power supply combines three current tripping mechanisms per channel for generating a general overcurrent channel event (OVC): One relatively roughly grained (4 bit) current trip generator in form of hardware separated in a fast content (short by accident, e.g. of a scope probe, ~2x in size) and a slow hardware content (> 13 ms, not much more than 200 mA beyond the individually chosen maximum DC software current for each channel). This protection will work in any case even when the Microcontroller Firmware crashes (what it never did so far). Additionally a third fine grain trip current per channel can be adjusted in steps of 100 mA which is generated by the data from the current ADCs monitoring devices, and which resolves the trip current to better +/- 50 mA (>2A) after the in factory done individual channel calibration process.

With this trip accuracy the **W-Ie-Ne-R** MTCA.4 power supply lonely provides the possibility to the customers to individually change/arrange the used trip philosophy from the no-where-specified default or mainstream:

- **Default**: Installed Trip Level = Trip Level Programmed by MCH + 10 % (Headroom)
  = 1,10 x Trip Level Programmed by MCH
- **Exact**: Installed Trip Level = Trip Level Programmed by MCH
- **Individual**: Headroom 0 .. 30%

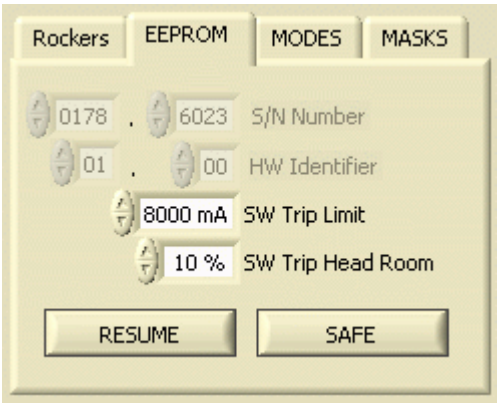
By the **Default** Case the normal attitude to give the maximum possible current consumable by the addressed card in the MTCA.4 Crate is guaranteed. Only not normal additional currents of +10% will lead to a switch-off of the channel.

In the **Exact** Case the user calculates the trip currents for all attached boards on his own in the way which is standard for all other **W-Ie-Ne-R** and **ISEG** products.

In the **Individual** Case one can rise the headroom to e.g. 20% to be on the long time safe side not to accidently switch off a channel in cause of consumer variations.

Additionally the **maximum trip current** can be defined either to allow for a variable general lower power limit per slot as which can be delivered by the power supply, e.g. by 7,6 A for 80 W as it is defined within the MTCA.4 specification.

To change those reference values from the defaults the MTCA.4 Control Software has to be invoked from a console with the additional command line parameter: “MTCA.exe `-- /mode` “. Doing this swapping into **W-Ie-Ne-R** Mode the following register card is able to attach:



Press SAFE to install the new values and then RESUME to check those again.

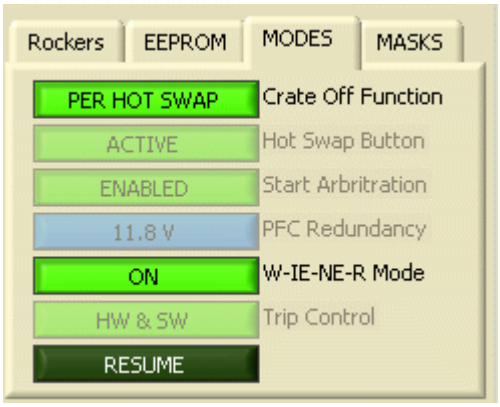
5.6 Crate Off Function

The **W-Ie-Ne-R** MTCA.4 power supply Hot Swap Button by default intends to switch off the whole crate if or "even if" this power supply is working lonely as a primary power supply without any other redundant power supplies situated in the crate or with those but which would not be able to take over the crate supply promptly (Power Good States of redundant supplies are OFF).

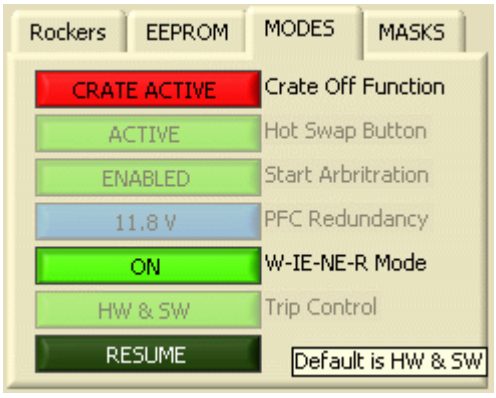
This **W-Ie-Ne-R** functionality is on by default and may be useful for everyday development work with MTCA.4 where the crates are switched on and off more often in case of won silence or for easy deactivation during working pauses.

If this additional **W-Ie-Ne-R** functionality is not whished and the crate should run further in any case even if the Hot Swap Button is pressed by accident as it is the case in underground and remotely driven setups for accelerators and big detector setups deactivate the **Crate Off Function**:

Invoke again the MTCA.4 Control Software from a console with the additional command line parameter: "MTCA.exe `-- /mode` ". Swapping the module again into **W-Ie-Ne-R** Mode the following register card is able to attach:



Press the Crate Off Function button to switch from PER HOT SWAP to CRATE ACTIVE mode and Press RESUME. Wait for some seconds to check whether the new setting has been taken over from the EEPROM. Else try again.

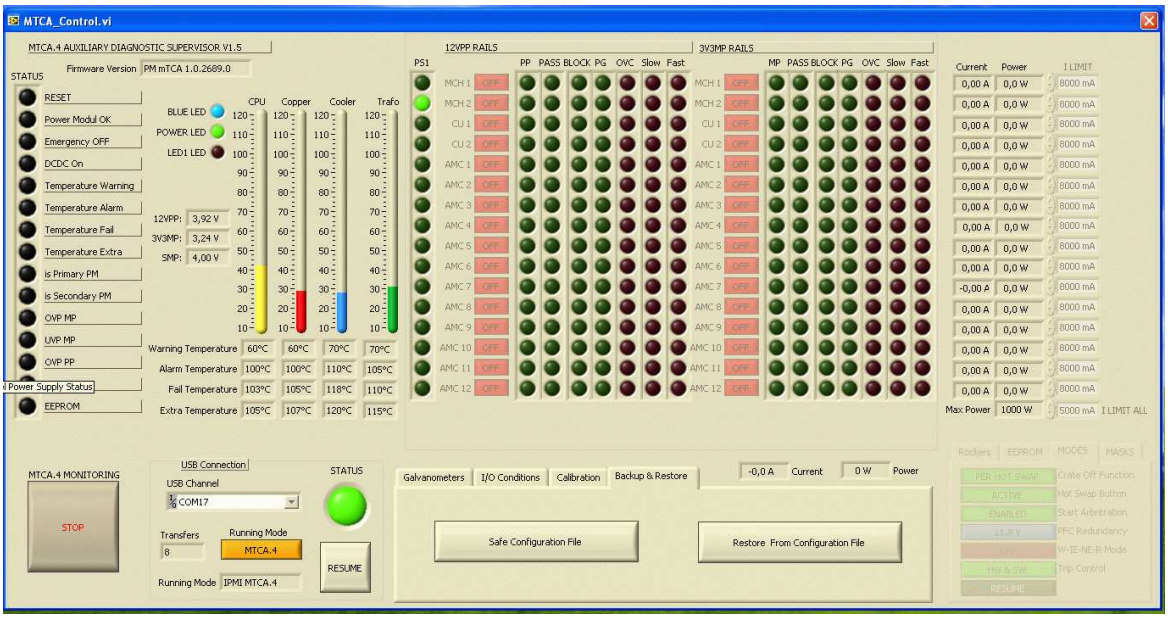


If o.k. finally change to **MTCA.4 IPMI** Mode again.

5.7 Backup & Restore

The **W-Ie-Ne-R** MTCA Power Supply as is full of highly sophisticated firmware with a bundle of hardware and software settings. Hence it is wise to make a backup of those settings when the user made changes to the defaults as described in this chapter and is finally convinced of these settings to work properly in his setup. Further it is recommended to do a backup before any hpm-upgrade or hpm-update (see chapter 4).

An actual backup can be easily made within the LabView MTCA.4 Control Software invoked from a console with the additional command line parameter: "MTCA.exe `-- /mode` ":



For this no swap to **W-Ie-Ne-R** mode is needed. Simply unfold the Backup & Restore Folder and press SAFE CONFIGURATION FILE to make the actual backup: A standard windows directory selector opens with the proposed standard configuration file name. Simply safe this file to a directory folder of your choice.

What never should happen but if EEPROM data get cleared or got corrupt after an hpm-download a stored backup as the one above can be re-read by simply pressing the RESTORE FROM CONFIGURATION FILE button and then selecting the whished backup file within the directory selector opening.

Backup files may be also useful for exchanging debug information for technical problems with the manufacturer **W-Ie-Ne-R** who conserves also those backup files from time of delivery sorted by series numbers (available since winter 2014 lot).